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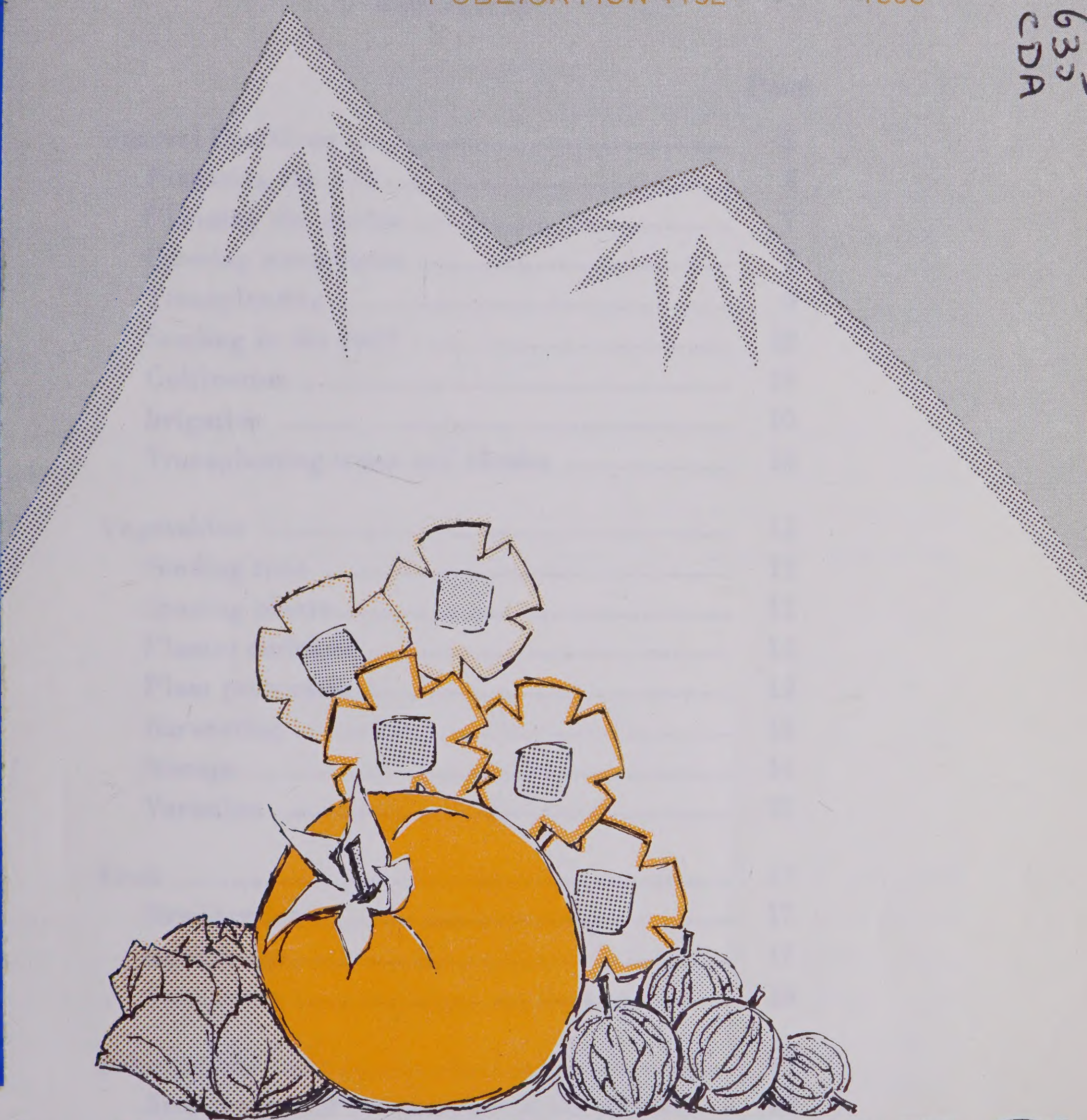

GARDENING IN THE YUKON

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ANADA DEPARTMENT OF AGRICULTURE

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GARDENING IN THE YUKON

Gerard H. Gubbels[1]
Experimental Farm, Mile 1019, Alaska Highway

Gardening in the Yukon can be satisfying and profitable. A well-tended vegetable garden can supply a great variety of fresh, tasty vegetables during the summer and, with proper storage, well into the winter. You can brighten up your home grounds with attractive, colorful displays of annual and perennial flowers, trim lawns, and well-placed trees and shrubs.

The Yukon has a short, cool growing season. But many annual vegetables and flowers thrive when you use early-maturing varieties, cultivate properly and protect the tender plants. Perennial vegetables, fruits and ornamentals also grow well when wisely chosen and properly cared for.

GENERAL PRACTICES

PREPARING THE SOIL

An ideal soil for gardening is a balanced mixture of sand, clay and organic matter. Heavy clay soils are hard to work. However, they are satisfactory when organic matter is added and they are handled carefully. Very sandy or gravelly soils are usually not fertile and do not hold water well. To improve them, you may spread four to six inches of muck on the surface and mix this thoroughly with the top two inches of soil. Muck is brown to black, has a great deal of organic matter and holds water well.

The soils of the Yukon are usually low in organic matter and are rather infertile. They are usually cool for most crops. However, if you fertilize and cultivate them properly, fertility and temperature can be raised and many garden crops grown satisfactorily.

It is best to cultivate the soil in the fall, by either spading or plowing, to a depth of four to six inches. Leave the land rough to hold snow and to allow the air to mellow and break down the larger clods.

When the soil is dry enough to work in the spring, break it down to a good seedbed with a harrow, disk or hand rake. You may also use a plank float to break the clods and level the soil.

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[1] Horticulturist.

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Manure and Compost

Well-rotted manure is an excellent soil conditioner, as it supplies plant food and also improves soil structure. Since manure is not readily available, you may use well-rotted compost instead. To prepare a compost heap, mix organic matter such as grass clippings, plant refuse and peat with small amounts of soil. Let the pile stand until it is well rotted. Turn it occasionally and add a little nitrogen fertilizer to speed up decomposition.

Spread manure or compost over the soil before you plow or spade. Use 500 to 1,000 pounds per 1,000 square feet.

Lime

Do not add lime to the soil unless you are sure that the soil is acid, or "sour." Most of the soils in the Yukon are neutral to alkaline and liming is not recommended. However, if lime is needed, apply it in the fall before cultivation.

Chemical Fertilizers

Many of the soils in the Yukon are low in nitrogen and phosphorus. Chemical fertilizers usually increase yields, particularly where barnyard manure is not available.

Nitrogen, phosphorus and potassium are the three major elements in chemical fertilizers. These may be bought individually or as a mixed fertilizer. A fertilizer is described by its chemical analysis, which is clearly marked on the container. The first figure refers to the percentage of available nitrogen (N), the next to the percentage of available phosphoric acid (P_2O_5) and the last to the percentage of available potash (K_2O). For example, an 8-12-6 fertilizer contains 8 percent nitrogen, 12 percent phosphoric acid and 6 percent potash.

In choosing fertilizer, be sure to consider the fertility of the soil and the needs of the crops. Leafy plants, such as spinach, lettuce and cabbage, generally need more nitrogen and less phosphate and potash than do root crops such as carrots and turnips.

Transportation costs are high. Therefore, buy fertilizers that have high concentrations of the elements required. Fertilizers such as ammonium phosphate (11-48-0), ammonium nitrate (33-0-0), triple superphosphate (0-45-0), muriate of potash (0-0-60) and mixtures of these, such as 10-20-10 or 10-32-10, are examples.

Applying Fertilizer

Generally, for soil to which muck has been added, apply a complete fertilizer, 10-20-10 or 10-32-10, at 15 pounds per 1,000 square feet. Heavy clay soils may have enough potassium. A fertilizer such as 16-20-0 at 15 pounds per 1,000 square feet is preferable for them.

Apply fertilizer in the spring at seeding time. You may broadcast it and work it into the soil when preparing the seedbed, or place it in a band beside the row at planting time. Broadcasting is the simplest way of applying it, but requires a higher rate than the band method for the same results. The fertilizer in a band, beside the row, is more readily available to the plants, particularly in the early stages of growth.

When you use the band method, be sure that the seed and fertilizer do not come in direct contact. Place the fertilizer to the side and below the seed. To do this, make the seed trench a little deeper and wider than needed, place a thin band of fertilizer in the trench, and cover it with a shallow layer of soil. Then sow the seed in the usual way. Or place the fertilizer in a trench alongside the seed row or row of transplants.

PLANNING THE GARDEN

Plan your garden well before spring. It is best to draw up a planting plan with suitable spaces between rows, so that you can balance the various vegetables, fruits and ornamentals according to your needs. From the plan, knowing the lengths of the rows or the space allotted to each crop, you can determine the quantity of seed and the number of transplants needed. Plan to have vegetables such as rhubarb, perennial onions and chives along the side or end of the garden.

If you have plenty of land, it is a good practice to divide the garden area in half. Plant the vegetables in one half one year and in the other half the next year. The half that is not planted to vegetables may be left fallow or it may be sown in spring to fall rye or field peas. When dug in or plowed down in the fall, this crop adds organic matter to the soil.

If seeds, fertilizers, garden chemicals and equipment cannot be obtained locally, you should order them well ahead of the time you need them.

GROWING TRANSPLANTS

Some vegetables and flowers must be grown under glass for six to eight weeks before they are transplanted to the garden. This ensures an early, rapid start in the short growing season.

Prepare the soil for growing transplants by mixing two parts of a good, fertile soil with one part of compost or peat and one part of sand. Add half an ounce of superphosphate (0-45-0) per cubic foot of the mixture.

Place the soil in boxes, or flats, about 13 by 22 by 3 inches in size. Lay a sheet of newspaper on the bottom of the flat to cover the drain spaces between the boards. Level and firm the soil. Then sow the seed shallowly in rows about 2 inches apart. Water carefully so that you do not disturb the seed. To help keep the moisture in, place a sheet of newspaper on the surface of the soil, but remove it as soon as the seedlings begin to emerge.

The seeds germinate best if you place the flat in a warm place, at 70 to 75° F. A bright south window in the house, a greenhouse or a hotbed is suitable. When the seedlings emerge, thin them if they are crowded.

The stems of the seedlings sometimes damp off or rot at the soil surface. To control this disease:

- Sterilize the soil before seeding.
- Treat the seed with a recommended fungicide.
- Do not water too often.
- Supply enough ventilation.
- Keep the seedlings from becoming crowded.

If damping off develops, you may check it with a recommended fungicide.

When the first true leaves form, transplant the seedlings to another flat or to pots. Plant them singly 2 to 3 inches apart. Prepare the soil for the transplants by mixing 7 parts of good soil with 3 parts of compost or peat and 2 parts of coarse sand. To each cubic foot of this mixture, add about 2 ounces of a fertilizer such as 8-12-6 and half an ounce of 0-45-0.

The plants now will occupy much more space than they did in the seed flat. It is best to move seedlings started in the house to a hotbed or greenhouse. A cool basement (60 to 65° F) is satisfactory if artificial lighting is supplied, as outlined in the leaflet *Using Artificial Light* of the Canada Department of Agriculture.

Hotbeds should be placed in a sunny location, preferably on the south side of a building. Fresh horse manure is a satisfactory heating material but, as it is seldom readily available, it is best to use electricity (Figure 1). Heating cables for this purpose are available complete with thermostats and instructions for installing them.

Take special care to control the temperature in the hotbed. For most seedlings 60 to 65° F is desirable. On sunny days the temperature rises quickly and the plants may be injured if ventilation is not provided. Be sure to close the hotbed sashes early in the evening to conserve heat. On cold nights you may have to cover the sashes with old mats, sacking or other insulating materials to maintain the desired temperature.

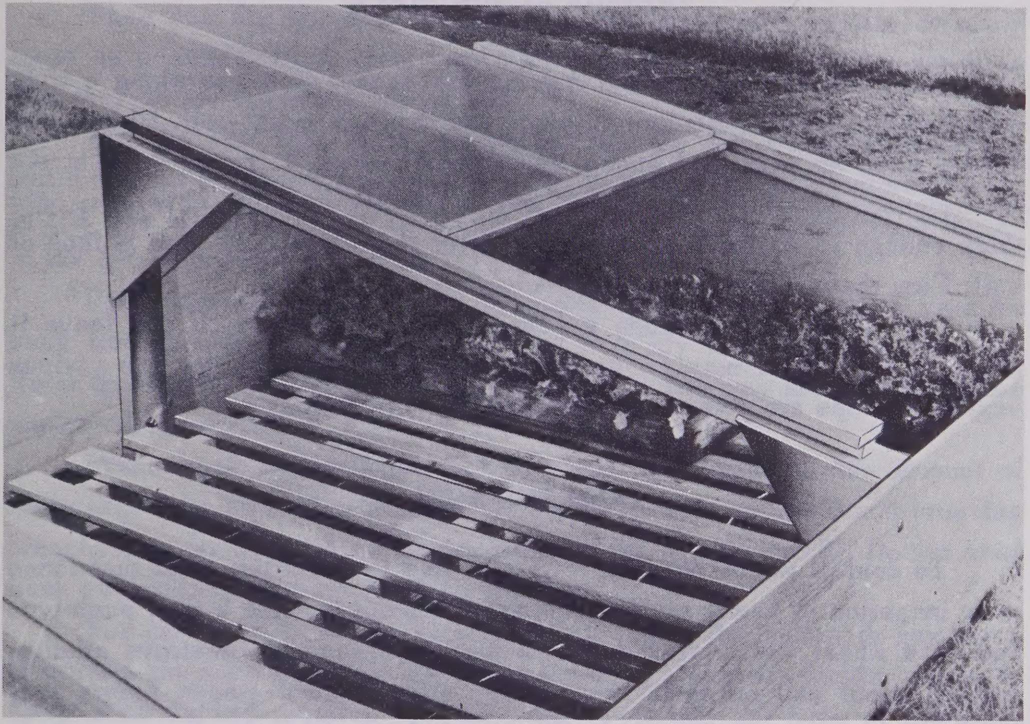

Figure 1.—A hotbed with plastic-covered sashes. Note the heating cable.

Water the seedlings in the morning so that the surface of the soil is dry before evening. During cool, dull weather, water only every second or third day. Too frequent watering promotes damping off.

Harden the plants 10 to 14 days before it is time to transplant them to the garden. Do this by gradually exposing the plants to outdoor conditions.

TRANSPLANTING

Water the young plants thoroughly several hours before transplanting them to the garden. Transplant during a dull day or in the evening. When you take the plants from the containers, keep as much soil as possible on the roots. Place the plants a little deeper in the soil than they were in the containers. Firm the soil around the roots, leaving a depression around the base of each plant to hold water. Water the plants well soon after planting. A day or two later, cultivate the soil shallowly around the plants.

SEEDING IN THE FIELD

Make the seed furrow by drawing the corner of a hoe along a tight cord marking the row. Be sure to place the seeds in moist soil. Plant large seeds, such as peas and beans, individually about 2 inches deep at the recommended spacings. Sow small seeds directly from the envelope, only thick enough to ensure a good stand. Cover them with only ¼ to ½ inch of soil. Firm the soil well around the seeds.

Soon after the seedlings appear, thin them properly. If you leave it too late the plants may be seriously crowded. Spacings for the various vegetable crops are given under the section on vegetables.

CULTIVATION

To control weeds between rows and also to break the crust that forms after irrigation or heavy rainfall, cultivate shallowly. Use a flat, push-type hoe or a wheel hoe. Avoid deep cultivation because it destroys shallow feeding roots and tends to dry out the soil. Control weeds before they become large enough to compete for water, food and light. Remove weeds between the plants in the row by hand. Hill up potatoes a little each time you cultivate them until they begin to bloom.

IRRIGATION

As rainfall during the growing season in the Yukon is usually low, garden plants benefit from watering in most years. Be sure that the water penetrates down to the plant roots. It is better to water well occasionally than to sprinkle lightly at frequent intervals.

To find out if you need to water the garden, squeeze a handful of soil taken from the root zone. If the ball of soil is crumbly when you release the pressure, the moisture content of the soil is too low and the plants would benefit by watering.

TRANSPLANTING TREES AND SHRUBS

Early spring is the best time to transplant most trees and shrubs. Evergreens may be planted during the summer as well, but be sure to move them very carefully.

When you dig the tree or shrub to be transplanted, retain as many roots as possible. Pack them immediately in wet moss or wet sacking so that they do not dry in the sun or wind.

Dig the new hole large enough to take the roots without crowding. Put a mixture of topsoil and subsoil in the bottom of the hole before you set in the tree or shrub. Place the plant one or two inches deeper than it was in the forest or nursery.

Place topsoil around the roots, using at least half a cubic yard for each tree to give it a good start. Pack it firmly as you fill in the hole. Water thoroughly when the hole is almost filled. You may use subsoil at the surface (Figure 2).

Prune back a deciduous tree or shrub in relation to the amount of roots that were lost when digging the plant. Remove crowded and crossing branches but try to maintain the symmetry of the top (Figure 3). Do not head back evergreens, as it would disfigure them.

You may have to stake the trees or shrubs or tie them with guy ropes to prevent the wind from disturbing and breaking the newly forming rootlets. Keep a circle two or three feet in diameter around the base of the plant free of grass and weeds. You may apply a little fertilizer as soon as the plant is established. Mix it into the surface soil before watering.

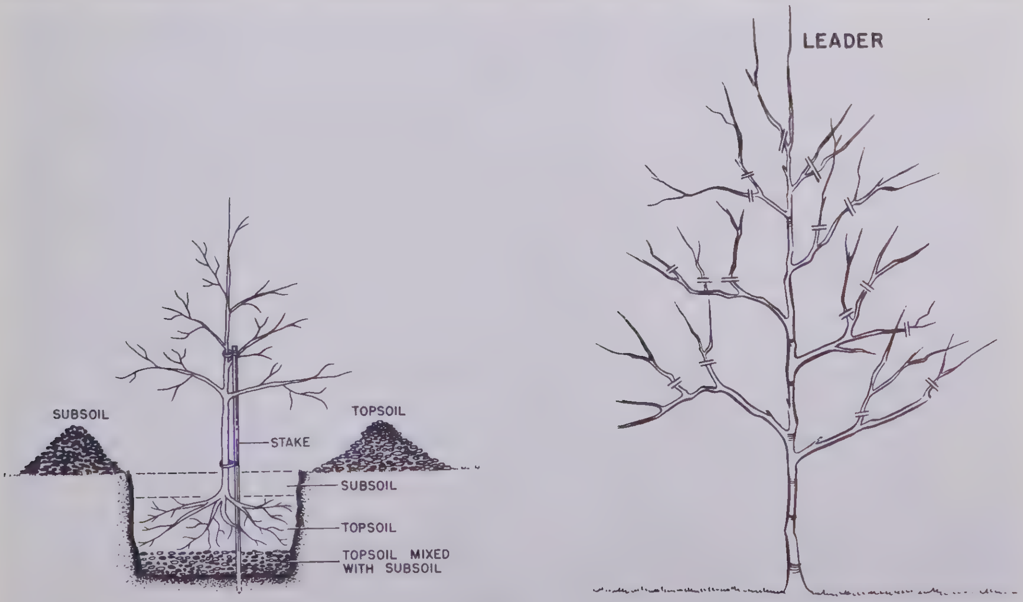

Figure 2 (left).—Planting a tree. **Figure 3** (right).—How to prune a deciduous tree. Be sure to keep the main leader. Prune to leave no stubs and to have buds facing the desired directions.

VEGETABLES

SEEDING TIME

Seeding time varies from year to year and from one locality to another. Table 1 (p. 28) serves as a general guide.

SPACING PLANTS

Space various vegetables according to their size. Table 2 (p. 29) gives suggested spacings that may be used as a guide. If you are going to use power equipment for cultivating, space the rows to suit the wheel spacing and the cultivator design.

PLASTIC MULCHES

For some vegetables, plastic mulches help to hasten maturity and increase yields. They conserve moisture, increase soil temperature and keep the soil from packing after rain or irrigation.

Clear and black polyethylene, 1.5 or 2 mils thick, are the plastics most commonly used. Clear polyethylene increases soil temperature considerably more than does black polyethylene. Black polyethylene controls weeds but clear polyethylene does not.

Spread the polyethylene over the soil along the rows in widths of two to four feet, and keep it in place by spreading soil over the edges. Cut slits in the sheets and plant the young plants through them. It is best to seed before laying the plastic and to cut the slits as the seedlings emerge.

PLANT PROTECTORS

Warm-season crops such as tomatoes, cucumbers, beans and corn generally do not do well in the open field in the Yukon. The growing season is too short and the temperatures are too low for them to thrive. In some areas, frosts may occur during the summer. To grow these crops successfully, you must give them some form of protection.

Several types of protectors are available commercially, and some can readily be constructed. The small ones, made of waxed paper or plastic, cover individual small plants. Large protectors may have a wood or metal framework covered with glass or one of the many types of plastic materials now available (Figure 4). These may vary in size and design to protect one or several rows of plants.

The large, greenhouse-type protectors may be heated during very cool weather. This gets the plants off to a fast, early start in spring, keeps them growing rapidly during the summer, and prolongs the harvesting time in the fall.

With all protectors, the plants must be ventilated during warm summer days. Temperatures above 80° F may injure the plants.

HARVESTING

The time of harvesting is important for vegetables used during the summer. Many of these vegetables are at their best for eating before they reach full size. At full size the texture is often coarse and the flavor poor.

Be very careful to avoid cutting or bruising vegetables when you harvest them for storage. Cuts and bruises give ready access to diseases, which greatly reduce storage life. Care must also be taken to prevent wilting during harvesting.

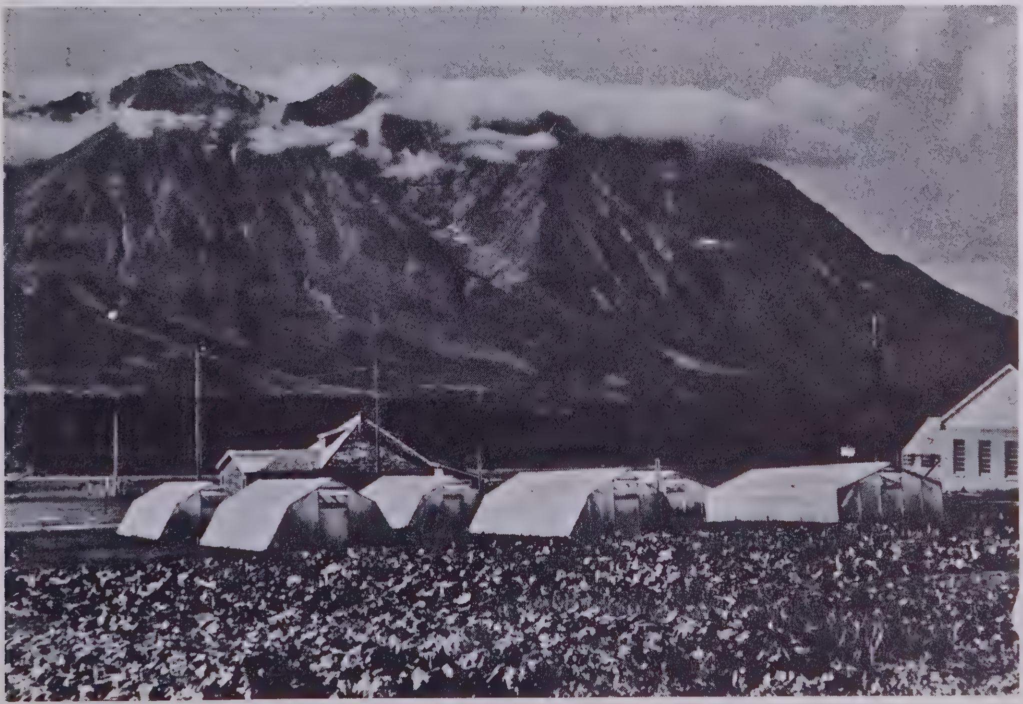

Figure 4.—Portable shelters at the Experimental Farm, Mile 1019.

STORAGE

A small, well-insulated room in the basement is a good place to store vegetables for winter use. Details of construction are given in *Construction and Operation of a Home Storage for Fruits and Vegetables*, Canada Department of Agriculture Publication 743.

The temperature in the storage room may be kept at about 40° F by supplying ventilation from the outside. It is best to keep the room dark. A relative humidity of 90 percent is desirable, and may be maintained by occasionally sprinkling water on a 2-inch layer of vermiculite or peat moss beneath a slatted, raised floor in the storage area. The storage room is simple to maintain but you must give it regular attention.

Store potatoes, rutabagas and cabbage in open bins. Pack beets, carrots and parsnips in damp sand, damp moss, or plastic bags. If you use plastic bags, be sure to have a few small holes in them to allow harmful gases to escape.

Store onions in a dry room with a relative humidity of about 70 percent or lower.

Figure 5.—Potato field at the Experimental Farm, Mile 1019.

Quick-freeze highly perishable vegetables such as peas, broad beans, spinach, broccoli, cauliflower and Brussels sprouts, and store them in a deep freeze. Many useful hints are given in *Freezing Foods*, Canada Department of Agriculture Publication 892.

VARIETIES

The following varieties are recommended according to the method of starting the plants and where they are to be grown to maturity (Figure 5). The list may need to be revised as new, improved varieties become available.

Vegetable	**Varieties**	**Remarks**
	Sown in the Garden	
Broad bean	Broad Windsor	Protect against frost while the pods are developing, if necessary.
Beet	Detroit Dark Red, Flat Egyptian	
Carrot	Amsterdam, Red Cored Chantenay	
Endive	Green Curled, Broad Leaved Batavian	
Herbs (dill, summer savory, sage)		
Kohlrabi	Early White Vienna, Early Purple Vienna	Control turnip maggot and red turnip beetle.
Leaf lettuce	Grand Rapids, Salad Bowl	
Onion	Yellow Dutch sets, Yellow Globe Danvers (for green onions)	Control onion maggot.
Parsley	Champion Moss Curled	
Parsnip	Short Thick, Hollow Crown	
Pea	Laxton's Progress, Little Marvel, Alaska	Protect against frost while the pods are developing.

Vegetable	Varieties	Remarks
Potato	Warba	Susceptible to common scab. Protect against frost, if necessary. New varieties are being tested.
Radish	Cherry Belle, Comet	Control turnip maggot and red turnip beetle.
Rutabaga	Laurentian	Control turnip maggot and red turnip beetle.
Spinach	King of Denmark, Bloomsdale	
Swiss chard	Lucullus, Fordhook, Giant	
Turnip (summer)	Purple Top Milan, Early White Milan	Control turnip maggot and red turnip beetle.
Rhubarb	Macdonald	Plant roots in early spring. Productive for over 12 years.
	Started Indoors for Garden Planting	
Broccoli	Green Sprouting (Calabrese), Waltham 29	Control root maggots.
Brussels sprouts	Jade Cross F_1 Hybrid	Control root maggots.
Cabbage	Golden Acre (early), Glory of Enkhuizen (late), Early Drumhead (Savoy)	Control root maggots.
Cauliflower	Early Snowball, Snow Drift	Avoid severe checks in growth. Control root maggots.
Kale	Green Curled	Harvest young leaves as they develop. Control root maggots.
Lettuce (head)	Premier Great Lakes, Imperial, Great Lakes	
Onion	Yellow Globe Danvers	Control onion maggot.

Vegetable	Varieties	Remarks
	Started Indoors for Planting under Plant Protectors	
Celery	Utah 15	Does well in cold frame.
Tomato	Quebec No. 5	Indeterminate - stake and prune.
	Early Lethbridge, Early Chatham	Determinate - no staking or pruning needed.
	Sown Directly under Plant Protectors	
Bean	Round Pod Kidney Wax	
Cucumber	Surecrop Hybrid, Marketer	Train to stakes or let spread on ground.

FRUIT

STRAWBERRIES

Many commercial varieties and strains of strawberry have been tried but none are consistently winter-hardy. Breeding to combine the winter-hardiness of wild species with the fruiting qualities of commercial varieties has given promising results. Further breeding and testing are being carried out.

BUSH FRUITS

Gooseberries, raspberries and saskatoons are the only bush fruits that have survived the winters at the Experimental Farm. The gooseberry varieties Pixwell and Abundance produced satisfactory fruit. Hardy raspberries were heavily infested with mites, and control measures were needed. To avoid winter damage, the raspberry canes needed to be bent to the ground in late autumn and the tips anchored with soil. The varieties Chief and Honeyking are suggested for trial. Saskatoons are the hardiest of all the bush fruits. Good berries have been produced each year. The varieties Pembina and Smoky are recommended.

Gooseberries may be planted in rows 6 feet apart with 5 feet between plants in the row. Raspberries may also be planted in rows 6 feet apart but with 2 feet between plants in the row. Saskatoons may be planted with the same spacings as for gooseberries or they may be planted 2 feet apart in the row to form a hedge.

TREE FRUITS

All of the plums, crabs and pears tried at the Experimental Farm died down to the snow level each winter. Sandcherries formed fruit in some years but the seasons were too short for the fruit to mature.

ORNAMENTALS

ARRANGEMENT OF ORNAMENTALS IN THE GARDEN

It takes careful planning to arrange trees, shrubs, lawns and flower beds in a pleasing manner. It is best to divide the home grounds into three areas: (1) the approach area, to create a pleasing setting for the house when viewed from the street; (2) the service area, which includes the driveway, garage, kitchen garden and space for clothes line and garbage containers; and (3) the recreation or garden area, which is a private area set aside for relaxation, lawn sports and flower gardening. By carefully choosing trees and shrubs and by using walls and fences, you may separate these areas from one another. *Planning Your Garden*, Canada Department of Agriculture Publication 1182, contains many useful landscaping principles for developing the home grounds attractively.

ANNUAL FLOWERS

Annual flowers are very useful in improving the appearance of the home grounds. Many can also be used for cut flowers. For a successful flower garden, be sure to choose hardy annuals. The flowers listed below have performed well and are therefore recommended.

Most of the annual flowers should be started indoors and later planted to the garden as outlined in the section "Growing Transplants." The section on soils gives information on preparing the areas where the flowers are to be planted. Sow the seeds indoors about the end of April and transplant the young plants outdoors when there is no danger from late-spring frosts. Alyssum and stocks need protection from root maggots and the red turnip beetle as outlined in the section on controlling pests.

A colorful display of flowers can be maintained well on into September by applying sprinkler irrigation for frost protection. This subject is covered near the end of this publication.

Common Name	**Scientific Name**	**Varieties**
	Border Plants	
Alyssum	*Lobularia*	Carpet of Snow, Violet Queen
Aster	*Callistephus*	Kirkwell Dwarf
Lobelia	*Lobelia*	Crystal Palace
Nemesia	*Nemesia*	Mixed colors
Phlox	*Phlox drummondii*	Mixed colors
	Bedding Plants	
African daisy or Cape Marigold	*Dimorphotheca*	Mixed colors
Aster	*Callistephus*	Queen of the Market, California Giant, Giant Crego
Butterfly-flower or poor man's orchid	*Schizanthus*	Wisetonensis Mixture
California poppy	*Eschscholzia*	Mixed colors
Candytuft	*Iberis*	Giant Hyacinth White
Clarkia	*Clarkia*	Royal Bouquet Mixture
Cornflower	*Centaurea*	Mixed colors
Toadflax	*Linaria*	Fairy Bouquet
Dwarf morning glory	*Convolvulus*	Mixed colors
Love-in-a-mist	*Nigella*	Miss Jekyll
Mignonette	*Reseda*	Sweet Scented
Petunia	*Petunia*	Fire Chief, Rose of Heaven, Red Satin
Pot marigold	*Calendula*	Orange King
Scarlet flax	*Linum*	Grandiflorum
Snapdragon	*Antirrhinum*	Majestic varieties
Stocks	*Matthiola*	Dwarf Ten Weeks
Strawflowers	*Helichrysum*	Monstrosum

Common Name	Scientific Name	Varieties
	Background Plants	
Painted tongue	*Salpiglossis*	Emperor Mixture
Burning bush	*Kochia*	Trichophylla
Baby's breath	*Gypsophila*	Covent Garden, Carmine
Sweet pea	*Lathyrus*	Spencer varieties

PERENNIAL FLOWERS

Only a few perennial flowers are hardy enough to survive the severe winters. The following list gives those that are hardy and semihardy. Some of these are started from seed indoors in spring; others are purchased as roots and planted in spring (Figure 6). Tulip bulbs are planted in the fall before the ground freezes.

Common Name	Scientific Name	Varieties
	Hardy Perennial Flowers	
Daylily	*Hemerocallis* spp.	Dr. Reigel
Gaillardia	*Gaillardia aristata*	Mixed
Iris	*Iris interior*	Kluane Beauty
Delphinium	*Delphinium ajacis*	Pacific hybrids
Peony	*Paeonia* spp.	Festiva Maxima, Sarah Bernhardt
Poppy, Iceland	*Papaver* spp.	
Speedwell	*Veronica spicata*	Spike Speedwell
	Semihardy Perennial Flowers	
Bleeding heart	*Dicentra spectabilis*	Common Bleeding Heart
Columbine	*Aquilegia hybrida*	Long Spurred Hybrid
Lychnis	*Lychnis chalcedonica*	Maltese Cross
Pink	*Dianthus plumarius*	Grass Pink
Poppy, Oriental	*Papaver* spp.	
Tulip	*Tulipa*	Various varieties

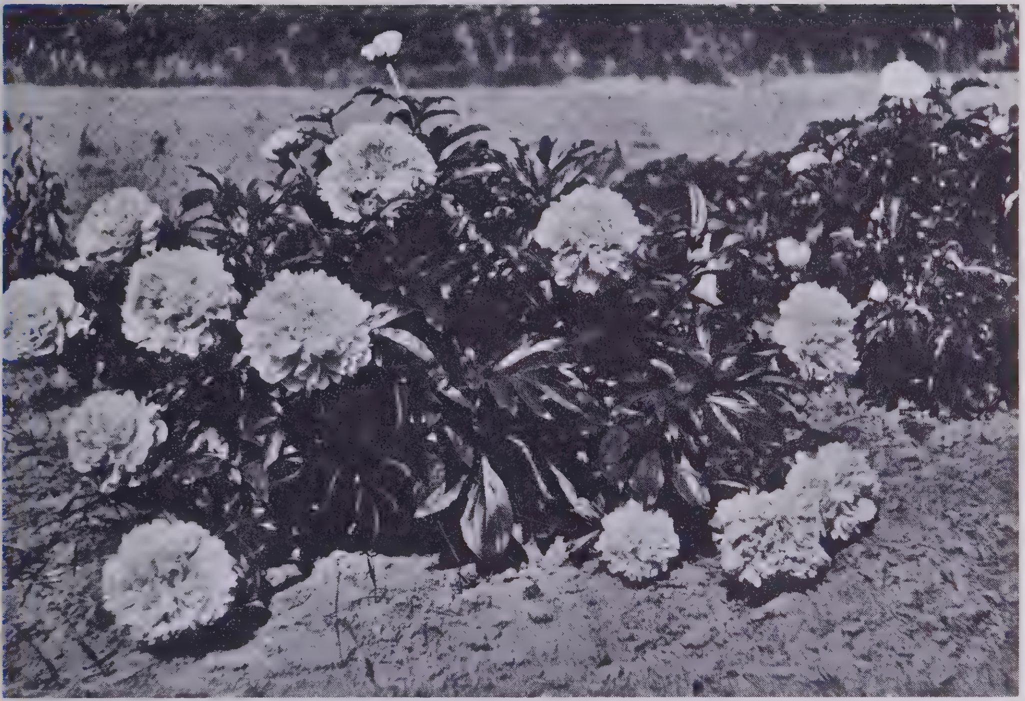

Figure 6.—Peony, variety Sarah Bernhardt, at the Experimental Farm, Mile 1019.

SHRUBS

Very few shrubs are hardy enough for the area. Oriental spirea (*Spiraea media*), Altai Scotch rose (*Rosa spinosissima* var. *altaica*), cotoneaster (*Cotoneaster lucida*) and golden clematis (*Clematis tangutica*) are the only imported ornamental shrubs found to be adapted to the climate. The following native shrubs are among those useful for landscaping: bush cinquefoil (*Potentilla fruticosa*), two native junipers (*Juniperus communis* var. *saxatilis* and *J. horizontalis*) and buffalo berry (*Shepherdia canadensis*).

Oriental spirea (Figure 7) forms a rounded bush up to 4 feet high and produces sprays of creamy-white flowers in mid-June.

Altai Scotch rose grows to a height of 4 to 5 feet. It produces many single, creamy-white, fragrant flowers from early July to mid-August.

Cotoneaster grows to a height of 3 feet. Its dark-green, glossy foliage turns to brilliant yellow-orange in the fall. Its black berries are prominent after the leaves fall.

Golden clematis produces vines up to 4 feet long. Bright-yellow bell-shaped flowers followed by fluffy silvery seed heads make a fine show from early July to September.

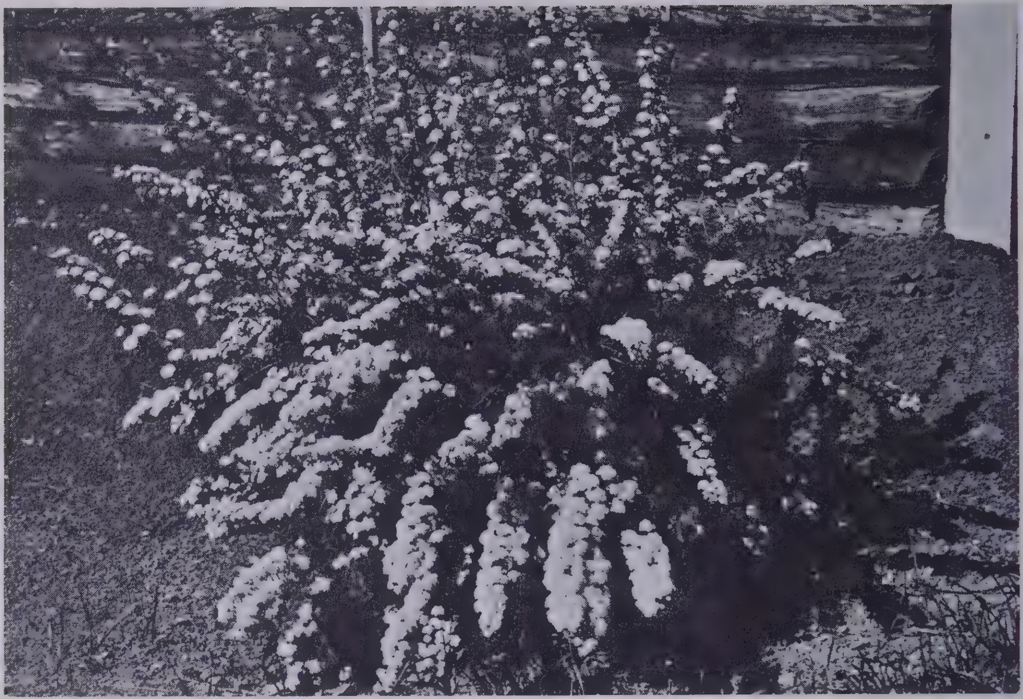

Figure 7.—Oriental spirea at the Experimental Farm, Mile 1019.

Bush cinquefoil grows to 3 feet in height and produces roselike yellow flowers throughout the summer.

Juniperus communis var. *saxatilis* is a low, spreading evergreen. It grows to a height of 2 feet and is useful in mass planting for ground cover.

Juniperus horizontalis is an evergreen that has long, trailing branches with bluish gray-green foliage. Its prostrate type of growth makes it ideal for ground cover.

Buffalo berry is a spreading shrub that grows 3 to 4 feet high. Its leaves are green above and silvery below. This shrub is useful for foundation planting.

TREES

The only imported ornamental tree that appears winter-hardy in this area is Mugo pine (*Pinus mugo* var. *mughus*). This is a slow-growing, small, shrublike tree. It is useful for foundation planting.

There are several native trees that can easily be transplanted for use in landscaping. They are: lodgepole pine (*Pinus contorta* var. *latifolia*), paper birch (*Betula papyrifera*), white spruce (*Picea glauca*), dwarf birch (*Betula* spp.) and willow (*Salix* spp.).

CONTROLLING PESTS

There are several garden pests that can cause considerable damage unless they are controlled. The following are those most likely to be encountered.

CAUTIONS: Follow closely all the directions and cautions listed on the insecticide label. An interval is required between the last application and harvest for some of the treatments. The interval varies with the material used, the number of applications and the amount applied. Keep to the interval given to avoid residues that would render the vegetables or fruits unfit for use.

Root Maggots

Two kinds of root maggots may give you trouble. The seed-corn maggot[2] and closely related species attack many kinds of plants, probably including onions. The turnip maggot[3] attacks the roots or underground stems of cabbage, cauliflower, radish, rutabaga, and certain flowers of the cabbage family.

The maggots infesting onions tunnel into the underground stems of the plants almost as soon as the seedlings emerge or the transplants are set out, and may kill the seedlings. Wilted, white or dead leaves show that these maggots are present.

The turnip maggot does not appear until midsummer. It rarely kills the plants but may weaken them, especially late plantings of cauliflower, so that the heads are small or inferior. In turnips or rutabagas the maggot tunnels near the surface of the root. It rarely goes more than a quarter of an inch into the flesh, but makes it unsightly. In preparing the roots for eating, however, there is considerable waste because you have to cut away the tunnels.

To control root maggots, apply aldrin or chlordane to the soil surface at seeding or planting time in a 10-inch band along the row. Rake the insecticide into the top two inches, and seed or plant along the center of the band.

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[2] *Hylemya cilicrura* (Rond.).

[3] *Hylemya floralis* (Fall.).

Cutworms[4]

To control underground feeders, apply insecticides as for root maggots. For surface feeders, apply DDT during the early part of the season and derris dust during the month before harvest.

Cabbageworms[5]

White or light-yellow butterflies around the vegetables indicate that cabbageworms are present. These are velvety green caterpillars that eat holes in the leaves of cabbage, cauliflower and turnips. To control them, spray or dust with DDT. Use derris dust when heads are formed.

Red Turnip Beetle[6]

This striking, hemispherical, red-and-black-striped beetle attacks all kinds of cruciferous plants in June and again in August. It chews holes in leaves in the spring, and often eats the flowers and seed pods in the late summer. The spiny, dark grubs of this beetle are about half an inch long when full-grown; they appear early in the spring on mustard and related weeds.

To control this beetle, spray or dust the infested plants with DDT as soon as it appears in the spring. During the month before harvest, use derris instead of DDT.

Aphids

These small insects are often found on some vegetables, fruits and ornamentals, usually on the undersides of the leaves. For control, spray with malathion.

Mites

Mites are very small, spiderlike pests barely visible with the naked eye. They are found on the undersides of the leaves. Speckled or blotched areas and fine webbing on the leaves indicate that mites are present. They are common on strawberries, bush fruits (particularly raspberries) and some ornamentals. For control, use malathion or Kelthane.

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[4] Several species, probably mainly *Euxoa ochrogaster* (Guen.).

[5] *Pieris* species.

[6] *Entomoscelis americana* Brown.

Currant Fruit Fly[7]

The larvae are small white maggots that feed within the berries of currants and gooseberries. For control, spray with DDT when 80 percent of the flowers have fallen and again 10 days later.

Rodents

To control gophers, trap them in early spring or use gopher poison. To keep rabbits out of the garden, fence it with 48-inch poultry netting and set the bottom 6 inches below ground level.

FROST

Some garden plants often yield much more if you protect them from frost. Among these are peas, broad beans, potatoes and some annual flowers. Peas normally do very well, but do not tolerate frost when the pods are developing. If they are touched by frost at this stage, the pods blister and the peas have a bitter taste. By protecting them during three or four frosty nights in August and early September, you may extend the seasons of these crops and of some annual flowers.

Sprinkler irrigation may be used for protecting plants against frost (Figure 8). Water sprinkled on the plants continuously while the temperature is below 32° F protects the plants from injury.

Ordinary garden sprinklers work satisfactorily, but generally apply much more water than is needed. This causes erosion and leaching of the soil. Applying a tenth to an eighth of an inch of water per hour usually protects the plants well.

HELPFUL PUBLICATIONS

Annual Flowers for Canadian Gardens, by R.W. Oliver. Canada Department of Agriculture Publication 796. 1961.

Construction and Operation of a Home Storage for Fruits and Vegetables, by W.R. Phillips. Canada Department of Agriculture Publication 743. 1957.

Culture of Ornamental Trees for Canadian Gardens, by R.W. Oliver. Canada Department of Agriculture Publication 994. 1959.

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[7] *Epochra canadensis* (Loew).

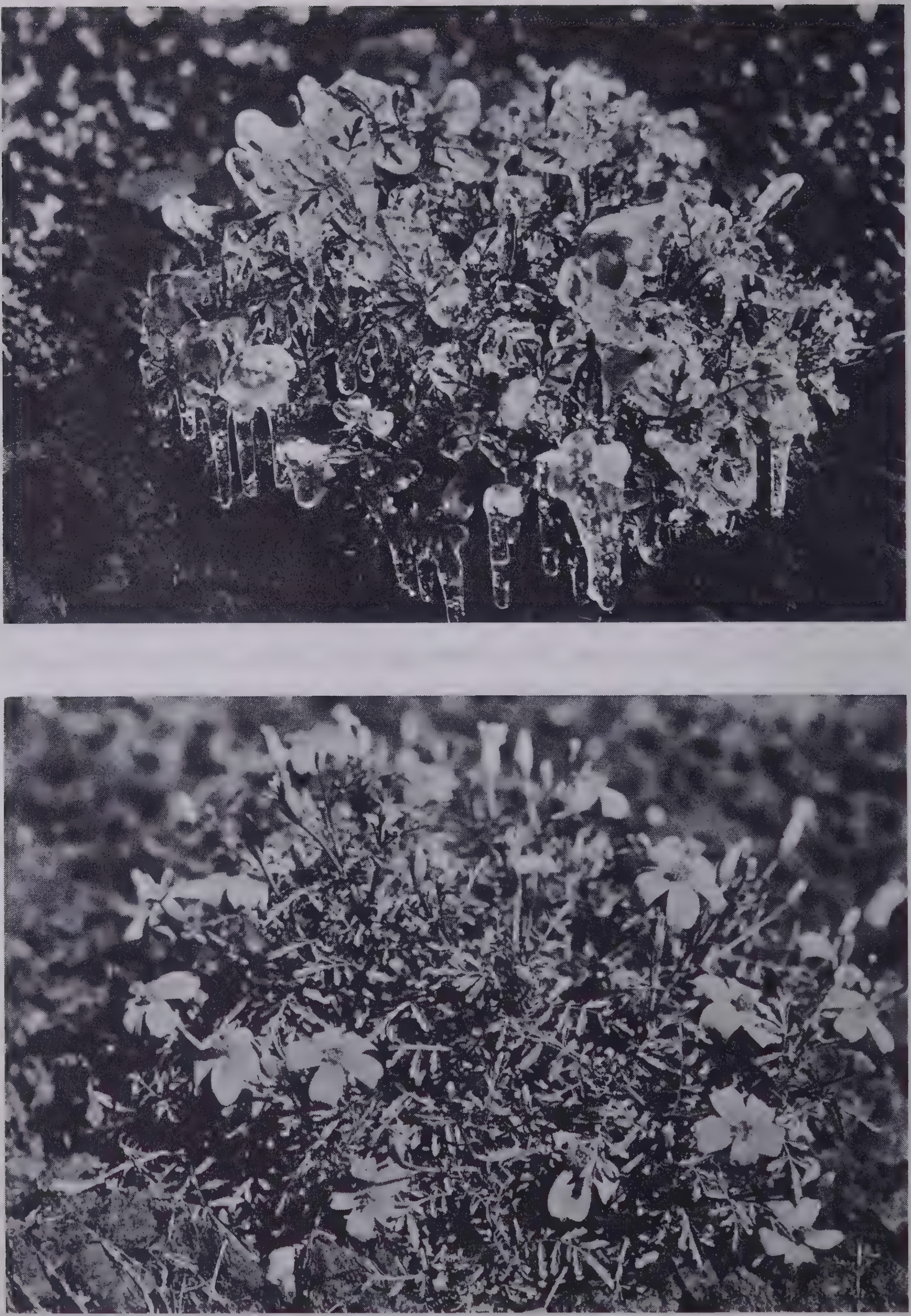

Figure 8.—Top, marigold coated with ice from irrigation water applied for frost control. Bottom, uninjured marigold after the ice melted.

Freezing Foods. Canada Department of Agriculture Publication 892. 1959.

Garden Rose Growing, by R.W. Oliver. Canada Department of Agriculture Publication 908. 1960.

Growing Herbaceous Perennials, by R.W. Oliver. Canada Department of Agriculture Publication 970. 1956.

Using Artificial Light, by A.P. Chan. Canada Department of Agriculture pamphlet. 1961.

Growing Vegetables in the Prairie Garden, by Charles Walkof. Canada Department of Agriculture Publication 1033. 1958.

Planning Your Garden, by R.W. Oliver. Canada Department of Agriculture Publication 795. 1958. (The revision, Publication 1182, will probably be available late in 1963.)

Potato Growing in Canada, by N.M. Parks. Canada Department of Agriculture Publication 918. 1958.

Yukon Horticultural Guide, by Experimental Farm, Mile 1019, Alaska Highway, Yukon Territory (available from the Experimental Farm only).

Copies of the above publications may be obtained free of charge from:

Information Division
Canada Department of Agriculture
Ottawa, Ontario
or
Experimental Farm, Research Branch
Canada Department of Agriculture
Mile 1019, Alaska Highway
Yukon Territory

For more information, contact the latter establishment.

A brand name is used in this publication because the chemical name is difficult for general use and there is no official common name for the active ingredient.

Table 1.—Guide to Planting Time for Vegetables

Time	Place	Vegetables
Early March	Indoors	Sow celery.
Early April	Indoors	Sow onions.
Mid to late April	Indoors	Sow cabbage, cauliflower, broccoli, Brussels sprouts, kale, head lettuce and tomatoes.
Mid to late May	Outdoors	Sow peas, broad beans, spinach, leaf lettuce, endive, herbs, onions (seed and sets), radishes, rutabagas, turnips (summer), carrots, parsnips, kohlrabi and potatoes.
Late May	Outdoors	Sow beets and Swiss chard.
Late May to early June	Outdoors	Transplant cabbage, cauliflower, broccoli, Brussels sprouts, kale, head lettuce and onions.
Early June	Under plant protectors	Sow cucumbers and beans; transplant tomatoes and celery.
Early to late June	Outdoors	Sow late plantings of radishes and leaf lettuce.

Table 2.—Recommended Spacings (Inches) for Thinning or Transplanting Vegetables

Vegetable	Between rows	In rows
Beans, bush	24	3
broad	24	8
Beets, bunching	18	1
storage	18	3
Broccoli	30	18
Brussels sprouts	30	18
Cabbage	30	18
Carrots	18	2
Cauliflower	30	18
Celery	12	8
Cucumbers	42	12
Endive	24	8
Herbs	18	6
Kale	30	18
Kohlrabi	24	4
Lettuce, leaf	18	8
head	18	12
Onions, seed	18	2
sets	18	3
transplants	18	3
Parsnips	18	3
Peas	30	2
Potatoes	36	12
Radishes	12	1
Rhubarb	48	48
Rutabagas	30	6
Spinach	18	6
Swiss chard	24	8
Tomatoes	30	18
Turnips, summer	24	4

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